



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/077,990	02/20/2002	Yuji Kohara	0829-0132P	5100

2292 7590 03/24/2004

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

VIJAYAKUMAR, KALLAMBELLA M

ART UNIT

PAPER NUMBER

1751

DATE MAILED: 03/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/077,990	KOHARA, YUJI
Examiner	Art Unit	
Kallambella Vijayakumar	1751	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 20 February 2002.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-7 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-3 is/are rejected.

7) Claim(s) 3, 4-7 is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 20 February 2002 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) Notice of Informal Patent Application (PTO-152)
6) Other: _____.

Detailed Action

1. Claims 1-7 are currently pending with the application.
2. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

- The disclosure is objected to because of the following informalities: The disclosure in sections 0020 and 0021 and the claims 3 and 5 are not comprehensible and contains idiomatic English, probably due to the machine translation. A substitute specification in proper idiomatic English and in compliance with 37 CFR 1.52(a) and (b) is required. The substitute specification filed must be accompanied by a statement that it contains no new matter.
- The use of the trademark BOKUJYU has been noted in this application. It has been capitalized, but not accompanied by the generic terminology, except the phrase "an ink stick gel". Clarification /correction needed on the generic equivalent of this Trade mark.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Objections

1. Claim 5 is objected to because of the following informalities: The claim has improper preamble. Suggested correction would be that the preamble should read as "The molded product of an energy converting polar plate from step (d) of claim-4 ". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 1-3 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The instant claims claim an energy-converting device comprising a polar plate with a specific composition and the disclosure lacks the enablement of a device.
2. Claim 5 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 5 recites a

limitation of "designed shape with correction of plant" that is not enabled by the specification.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1-4, 6 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
2. Regarding claims 1 and 4, the phrase "*carbonized calcium*" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "carbonized calcium"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d). Neither the claims nor the specification provide guidance in what materials are included by this phrase, so that the public could make use of the invention without stepping into the boundaries of the limitations of the instant claims by the applicants, and with out the burden of undue experimentation.

The examiner construes "carbonized calcium" to be calcium hydroxide treated with carbon dioxide forming calcium carbonate per the normal meaning as shown by Kessler (DE 4021028)(Abstract).

3. Regarding claim 2, the phrase "carbonized silicon" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "carbonized silicon"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d). Neither the claims nor the specification provide guidance in what materials are

included by this phrase, so that the public could make use of the invention without stepping in to the boundaries of the limitations of the instant claims by the applicants with out the burden of undue experimentation.

The examiner construes “carbonized silicon” to be silicon treated with carbon forming silicon carbide per the normal meaning as shown by Korechika et al (JP 62-255159) (Abstract).

4. Regarding claim 6, the phrase "coolant" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "coolant"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d). Neither the claims nor the specification provide guidance in what materials are included by this phrase, so that the public could make use of the invention without stepping in to the boundaries of the limitations of the instant claims by the applicants with out the burden of undue experimentation.

5. The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.
 - i). For example, Claim-2 reads a limitation of “for using a good conductor on the level of the molecule of carbon” that is not comprehensible.
 - ii). For example claims 3 and 4 read a limitation of “ink stick gel” that is not explained either by the claims or by the specification. The term “an ink stick gel” is indefinite because the specification does not clearly redefine the term or disclose what materials are included by this term.

1. The term "small amount of" in claim-2 and "scale like" in claims 3 and 4, "suitable quantity" and "various types of forms" in claim-4 are relative terms which render the claim indefinite. The term "small amount of" in claim-2 and "scale like" in claims 3 and 4, "suitable quantity" and "various types of forms" in claim-4 are not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The public will not be able to make use of the invention without the undue burden of experimentation.

Allowable Subject Matter

1. Claim 7 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
2. Claims 4-6 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record neither teaches nor suggestive of a method of making an energy converting polar plate device by mixing the components in two batches forming a binder and basic component of active material including carbonized calcium meeting the limitations of the instant claims by the applicants.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

- The use of phrase "*for generating effective electric power energy from hydrocarbon thereof*" in the claim-1 has not been treated with patentability. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).
The examiner construes this language as "Intended Use" and not treated with merits for patentability.

1. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fitts et al (US Pub 2002/0037448) in view of Yokota et al (JP 60-090805) or Saito et al (US Patent # 6,348,279).

Fitts et al teach compositions and making of moldable composites for electrochemical cell components including bipolar plate for a fuel cell comprising of thermosetting polymer/s, conductive fillers comprising of carbon, graphite and nanotubes and additives to improve thermal conductivity, impact, mold-release and thermo-oxidative stability comprising of carbonate and carbide of calcium and silicon carbide (Abstract, Col-1, Sections: 0006, 0012, 0024, 0026). Fitts further teaches that combination of fillers would be desired to maximize the packing density and electrical conductivity and the desired structural/thermal/resistance properties. Calcium carbonate/carbide would meet the limitation of carbonized calcium in claim-1 and silicon carbide would meet the limitation of carbonized silicon.

Fitts et al differ from the applicants wherein use of a thermosetting resin is taught in the making of bipolar plates, while exclusive use of melamine was not disclosed.

Yokota et al teaches the making of separating plate for a fuel cell with a composite comprising of graphite and melamine resin, the same components being claimed by the applicant in the instant claims (Abstract).

Saito et al teach forming the fuel cell separator plates comprising of melamine resin, carbon and graphite (Col-2, Lines: 21-26; 35-54; Col-3, lines: 11-26, Line-67).

It would have been obvious for one of ordinary skill in the art to make modifications to the compositions of Fitts et al by using melamine resin as the thermosetting portion of the

composition per the teachings of either Yokota et al or Saito et al to benefit from no-shrinkage and superior impermeability during operation of the fuel cell, because all the teachings are in the analogous art, and further improve the electrical conductivity by choosing carbon and graphite as conductive fillers because incorporating both carbon and graphite as conductive fillers because Fitts et al teach the benefit of such combination fillers and with the expectation of reasonable success in obviously arriving at the limitations of the instant claims by the applicants.

2. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al (US Patent # 6,348,279) in view of Fitts et al (US Pub 2002/0037448) or Zukerbrod (US Patent 5,336,573).

Saito et al teach the composition and making of separator for fuel cells comprising of a conductive powder, a thermoplastic or thermosetting resin, a glassy carbon, graphite and a metal. The polymer includes melamine in claim-1 and the graphite includes scaly graphite in claim-2 (Col-2, Lines: 21-26; 35-54; Col-3, lines: 11-26, Line-67).

Saito differ from the applicants, wherein the disclosure neither teaches nor suggestive of the use of carbonized calcium and silicon in the composition.

The disclosure by Fitts et al is set forth as above in Rejection-1, wherein the use of calcium carbonate, calcium carbide and silicon carbide in the composition of separator plate for fuel cell is taught.

Zukerbrod teaches the composition of separator plates for electrochemical cells wherein the fillers included carbon black, graphite, oxides/hydroxides of silicon and calcium, metal

carbonates such as calcium carbonate, and further teach that the fillers are selected with respect to the end use of the sheet product formed.

It would have been obvious for one of ordinary skill in the art to make modifications to the compositions of Saito et al by incorporating calcium carbonate and silicon carbide per the teachings of either Fitts et al or Zukerbrod et al to benefit from improved thermal conductivity and structural properties, because both Fitts and Zukerbrod teach such an incorporation and further suggestive that the fillers could be varied based end use of the desired product, and further all the teachings are in the analogous art, and with the expectation of reasonable success in obviously arriving at the limitations of the instant claims by the applicants.

Conclusion

- Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on M-Th, 07.00 - 16.30 hrs, Alt. Fri: 07.00-15.30 hrs.
- If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMV
March 17, 2004.


Mark Kopeck
Primary Examiner

Search Notes**Application No.**

10/077,990

Applicant(s)

KOHARA, YUJI

Examiner

Art Unit

Kallambella Vijayakumar

1751

SEARCHED

Class	Subclass	Date	Examiner
252	500	3/16/2004	KMV
252	511	3/16/2004	KMV
429	42	3/16/2004	KMV
429	44	3/16/2004	KMV
429	210	3/16/2004	KMV
429	231.8	3/16/2004	KMV

INTERFERENCE SEARCHED

Class	Subclass	Date	Examiner

**SEARCH NOTES
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
Doug McGinty	3/11/2004	KMV
East, JPO, EPO, Derwent	3/16/2004	KMV

Application Number 	Application No. 10/077,990 Examiner Kallambella Vijayakumar	Applicant(s) KOHARA, YUJI Art Unit 1751

Index of Claims

Application No.

10/077,990

Applicant(s)

KOHARA, YUJI

Examiner

Art Unit

Kallambella Vijayakumar

1751

✓	Rejected
=	Allowed

-	(Through numeral) Cancelled
+	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claim	Date	
Final	Original	
1	✓	3/16/04
2	✓	
3	✓	
4	✓	
5	✓	
6	✓	
7	O	
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		

Claim	Date	
Final	Original	
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		
76		
77		
78		
79		
80		
81		
82		
83		
84		
85		
86		
87		
88		
89		
90		
91		
92		
93		
94		
95		
96		
97		
98		
99		
100		

Claim	Date	
Final	Original	
101		
102		
103		
104		
105		
106		
107		
108		
109		
110		
111		
112		
113		
114		
115		
116		
117		
118		
119		
120		
121		
122		
123		
124		
125		
126		
127		
128		
129		
130		
131		
132		
133		
134		
135		
136		
137		
138		
139		
140		
141		
142		
143		
144		
145		
146		
147		
148		
149		
150		